WHAT IS CLAIMED IS:

1. A humidifier having a plurality of water-permeable hollow fiber membranes placed along the lengthwise direction of a housing accommodated within the housing in which gases each having a different moisture content flow inside and outside said hollow fiber membranes to carry out moisture exchange whereby the dry air having a low moisture content is humidified, said humidifier comprising:

a bypass channel, in which the gas flowing outside the hollow fiber membrane, formed on an approximately central portion of the cross-lengthwise direction of said housing along the lengthwise direction of said housing,

said bypass channel having a diameter larger than that of said hollow fiber membrane, and

an inlet which introduces the gas flowing outside the hollow fiber membrane into the housing and an outlet which discharges the gas flowing outside the hollow fiber membrane formed on said bypass channel.

2. The humidifier according to Claim 1, wherein a plurality of the outlets which discharge the gas flowing outside the hollow fiber membrane are formed on said bypass channel at several distance.

3. The humidifier according to Claim 1, wherein an inlet port for the introduction of the gas flowing outside the hollow fiber membrane into the housing and an outlet port which

discharges the gas flowing outside the hollow fiber membrane are formed on the housing, and said inlet port and said outlet port are placed opposite each other beyond the bypass channel.

4. The humidifier according to Claim 2, wherein an inlet port for the introduction of the gas flowing outside the hollow fiber membrane into the housing and an outlet port which discharges the gas flowing outside the hollow fiber membrane are formed on the housing, and said inlet port and said outlet port are placed opposite each other beyond the bypass channel.

5. A fuel cell system having the humidifier according to any one of Claims 1 to 4.

6. A humidification process utilizing a hollow fiber membrane module comprising a plurality of water-permeable hollow fiber membranes placed along the lengthwise direction of a housing accommodated within the housing, in which gases each having a different moisture content flow inside and outside said hollow fiber membranes to carry out moisture exchange whereby the dry air having a low moisture content is humidified, comprising:

a step for subjecting one of said gas to flow in the bypass channel;

a step for subjecting said gas from the bypass channel to flow outside the hollow fiber membrane; and

a step for carrying out a moisture exchange between said gas flowing outside the hollow fiber membrane and the gas flowing inside the hollow fiber membrane.